Takoma Park Neighborhood Traffic Calming Study
New Hampshire Gardens

Table of Contents

Appendices

Executive Summary

The residents of the Takoma Park neighborhood of New Hampshire Gardens, located in southeastern Montgomery County, Maryland, have expressed concerns of speeding and cut-through traffic within their neighborhood roadways. The following traffic calming study investigates the extent of the travel speeds and cut-through traffic and proposes measures to further calm traffic within the neighborhood.

The site description identifies the location of the study neighborhood and describes details of the roadway network, the intersections, and the surrounding area of the study neighborhood. Field observations of the neighborhood were performed to evaluate the geometrics, existing conditions and traffic characteristics of the neighborhood roadway network.

A morning and evening peak period origin-destination count was performed at the New Hampshire Gardens access intersections to obtain traffic volumes entering and exiting the neighborhood and to determine the amount of cut-through traffic using the neighborhood roadways. Currently Wildwood Drive is used extensively as a cut-through route.

Peak period travel times were collected along the New Hampshire Gardens neighborhood cut-through routes and the routes that would be taken by non-cut-through traffic for the same destinations to determine the time saved by motorists that use the cut-through routes. The neighborhood cut-through routes do not provide significant time savings over the non cut-through routes.

Spot speed studies were performed during the non-peak periods at locations along the neighborhood roadways to determine travel speeds within the neighborhood roadways. Currently Glenside Drive, Wildwood Drive, Kennewick Avenue, and Kirklynn Avenue experience 85th percentile travel speeds that are above the posted speed limit of 25 mph.

Proposed measures to calm traffic include additional speed hump locations, additional speed limit signs, geometric intersection improvements, and chicane installation location.

A. INTRODUCTION

As requested by the City of Takoma Park, Wallace, Montgomery & Associates, LLP (WM&A) is hereby providing the results of a comprehensive Neighborhood Traffic Calming Study for the New Hampshire Gardens neighborhood in Takoma Park, Maryland. The following report evaluates the existing neighborhood roadway and intersection traffic conditions and proposes measures to mitigate speeding and cut-through traffic. Specifically, this study addressed the following items:

- Roadway and intersection conditions and traffic control measures
- Traffic volumes entering and exiting the neighborhood
- Origin-destination analysis to measure cut-through traffic
- Roadway speed analysis
- Field observations
- Recommendations for traffic calming improvements

B. BACKGROUND

A coordination meeting with the community stakeholders of Takoma Park was held on Wednesday, May 16, 2007 to discuss neighborhood speeding and cut-through traffic concerns in the Long Branch/ Sligo, New Hampshire Gardens, and Pinecrest neighborhoods. The results from this meeting include the following:

- The neighborhood spokesperson who attended the meeting expressed that cut-through traffic was a significant concern.
- Speeding is considered travel speeds above 25 mph.
- Speeding is more likely to occur during off-peak times of the day.
- Identified the major cut-through routes.

Traffic calming measures can be divided into two categories:

1. Methods to reduce travel speeds to acceptable levels
2. Methods to reduce through traffic volumes to acceptable levels

The possible traffic management devices that may reduce speeds include:

- Speed Humps
- Stop Signs
- Chicanes, Chokers, Bump-outs
- Traffic Circles/ Roundabouts

The possible traffic management devices that may reduce through traffic include:

- Speed Humps
- No Left/ Right Turn Signs
- One-way Street
- Traffic Circles/ Roundabouts
- Median Barrier
- Forced Turn Channelization
- Semi-Diverter
- Diagonal Diverters
- Cul-de-Sac

C. SITE DESCRIPTION

1. Study Location

The New Hampshire Gardens residential neighborhood is located in the northeast area of Takoma Park in Montgomery County, Maryland. The neighborhood borders Long Branch Stream Valley Park to the south, MD 195 (Carroll Avenue) and Takoma Academy to the northwest, MD 193 (University Boulevard) and Hampshire Langley Shopping Center to the northeast, and MD 650 (New Hampshire Avenue) and Langley Park Shopping Center to the southeast. The neighborhood provides access along MD 195, MD 193 and MD 650. **Figure 1** illustrates the location of the neighborhood.

2. Roadway Conditions

The roadways within the New Hampshire Gardens neighborhood are closed-section, two-lane, and a mix of one-way and two-way. Roadway widths ranging from 26 ft to 30 ft, and speed limits of 25 mph. The following roadways were studied:

- Glenside Drive (26’ wide)
- Wildwood Drive (30’ wide)
- Lockney Avenue (26’ wide)
- Kennewick Avenue (26’ wide)
- Hammond Avenue (30’ wide)
- Merrimac Drive (32’ wide)
- Anne Street (30’ wide)
- Kirklynn Avenue (26’ wide)
- Jackson Avenue (26’ wide)
- Holton Lane (26’ wide)
- Kingwood Drive (26’ wide)
- Lancaster Road (26’ wide)
- Merwood Drive (26’ wide)

Glenside Drive and Wildwood Drive were identified as the major cut-through roadways within the neighborhood; and Glenside Drive, Wildwood Drive, and Anne Street provide speed humps at various locations to slow speeds. On-street parking is permitted throughout the neighborhood. **Figure 1** illustrates the neighborhood roadway network and locations of speed humps.

3. Intersection Conditions

The intersections within the New Hampshire Gardens neighborhood are stop controlled; except the Glenside Drive/ Wildwood Drive, Lockney Avenue/ Kennewick Avenue, and Lockney Avenue/ Hammond Avenue are controlled by traffic circles. All-way stop control is provided at the following intersections (See **Figure 1** for intersection locations):

- Glenside Drive @ Jackson Avenue
- Glenside Drive @ Kingwood Drive
- Glenside Drive @ Merwood Drive
- Wildwood Drive @ Anne Street
- Wildwood Drive @ Kirklynn Avenue
- Wildwood Drive @ Jackson Avenue
- Wildwood Drive @ Holton Lane
- Wildwood Drive @ Merwood Drive
- Anne Street @ Hammond Avenue

The Glenside Drive/ Anne Street intersection provides stop control for the westbound Glenside Drive and southbound Anne Street approaches. The following access intersections were studied to determine the amount of cut-through traffic (See **Figure 1** for intersection locations):

- Glenside Drive @ Wildwood Drive – Traffic circle
- MD 650 @ Merwood Drive - Signalized
- MD 195 @ Glenside Drive – 1-way stop controlled
- MD 195 @ Wildwood Drive – 1-way stop controlled

4. Field Observations

Observations of the New Hampshire Gardens neighborhood roadway network were performed specifically focused on driver behavior, traffic patterns, roadway geometry, and overall traffic operations. The following information summarizes the observations:

- Observed vehicles disobeying the stop signs along the Glenside Drive, Wildwood Drive, and Merwood Drive approaches at the all-way stop control intersections.
- Observed motorists traveling along Glenside Drive approaching the traffic circle not slowing down to yield. This behavior occurred many times while the eastbound Glenside Drive approach had a green light at the MD 650/ Glenside Drive signal.
- Observed a bus stopping within the Glenside Drive/ Wildwood Drive traffic circle to let school children disembark.
- Observed motorists not properly traversing the Lockney Avenue/ Kennewick Avenue traffic circle (not keeping right to go counterclockwise around the circle from the northbound Lockney Avenue approach).
- Observed on-street parking being utilized throughout the neighborhood. Many motorists would yield to opposing traffic through areas where travel widths were limited due to parked vehicles.
- The signs throughout the neighborhood were in good condition and proper sizes.
- Some of the all-way intersection did not have the “All-Way” supplemental signs under the Stop sign.
- Identified posted speed limit signs along Glenside Drive, Wildwood Avenue, and Kingwood Drive.

- Observed a significant amount of traffic from westbound MD 193 turning left onto Merrimac Drive, then turning left onto Carroll Avenue (westbound MD 193 left-turns are prohibited at the MD 193/ Carroll Avenue signal).

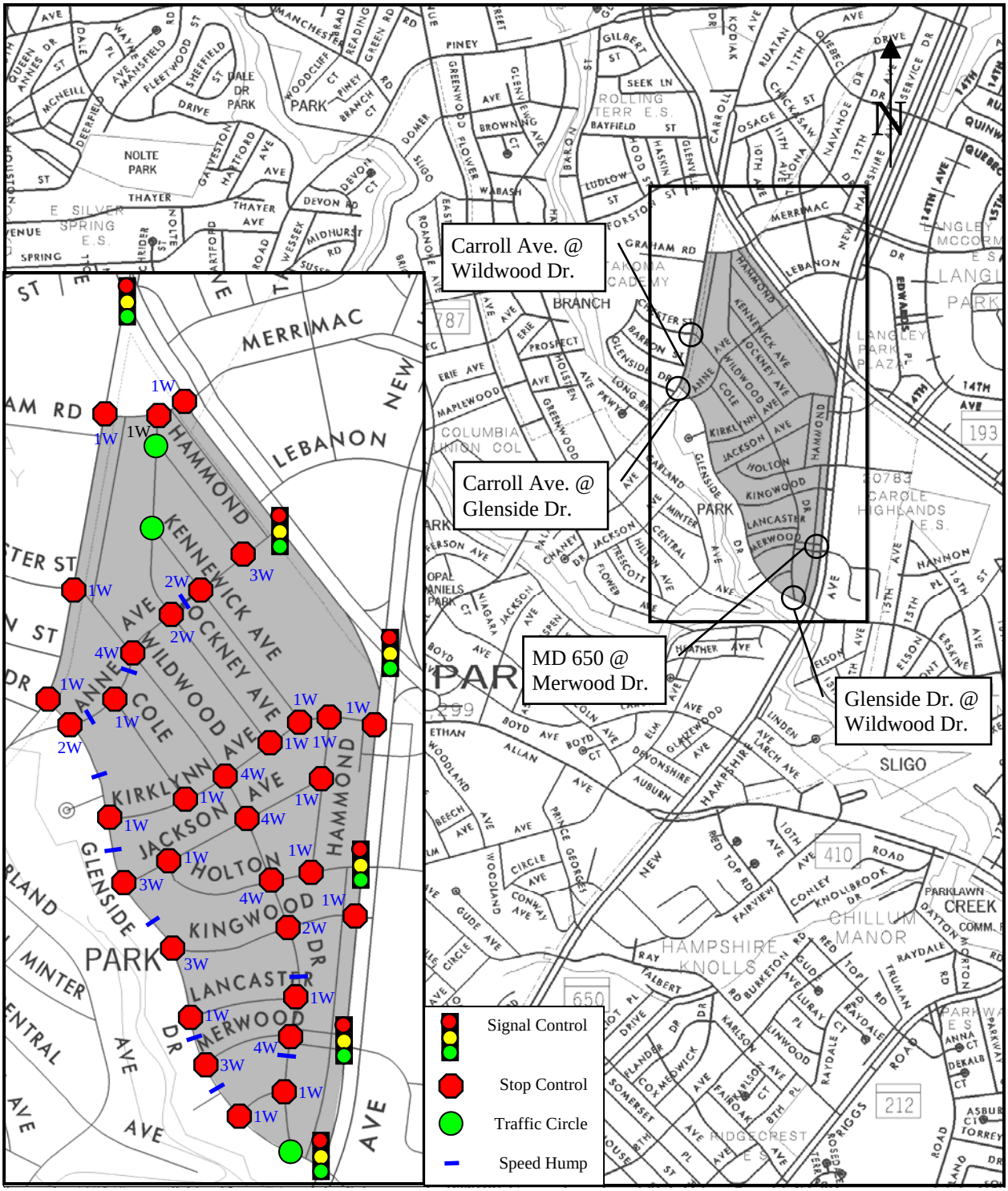

Figure 1. Study Location Map

D. TRAFFIC ANALYSES

1. Origin-Destination Analysis

A license plate style origin-destination study was performed during the morning (7 AM – 9 AM) and evening (4 PM – 6 PM) peak periods on Tuesday, May 22, 2007 at the New Hampshire Gardens neighborhood access intersections to determine the amount to cut-through traffic using the neighborhood roadways. License plate numbers of each vehicle entering and exiting the neighborhood were recorded at 15-second intervals. The time-stamped recordings at the Carroll Avenue intersections were then compared and matched with recordings at the MD 650 intersections to determine which vehicles were passing through the neighborhood. **Figure 2** displays the peak period volumes and percentage of cut-through traffic entering and exiting each neighborhood access intersection, and **Appendix A** provides detailed worksheets of the origin-destination analyses. A 25% or more cut-through volume is considered significant.

The majority of the cut-through traffic occurred along Wildwood Drive during both peak periods, and both MD 650 access intersections had significant cut-through traffic onto Wildwood Drive.

Merrimac Drive also experiences significant cut-through traffic, but the traffic along this roadway does not impact residential properties nor does it have operational problems.

2. Travel Time Analyses

A Travel Time analysis was completed to compare the time it takes to drive *through* the New Hampshire Gardens neighborhood versus the time it takes to drive *around* the neighborhood to determine the time-savings motorists incur by cutting through the neighborhood.

Travel times were collected on Wednesday, June 6, 2007 during the morning peak period along the New Hampshire Gardens neighborhood cut-through routes and several key circulating routes around the neighborhood. These routes are displayed with their respective travel times in **Figure 3**.

Table 1 below provides travel times for various begin and end points, comparing the route through the New Hampshire Gardens neighborhood versus traveling around the neighborhood.

Table 1. Travel Time Comparisons

Route	Cut – Through Route*	Non-Cut Through Route*	Cut – Through Time Savings / (Increase)
Point A to C	3:07	2:54	(0:13)
Point C to A	3:07	3:44	0:37
Point B to D	3:21	3:25	0:04
Point D to B	2:35	3:25	(0:50)

* x:xx = minutes : seconds

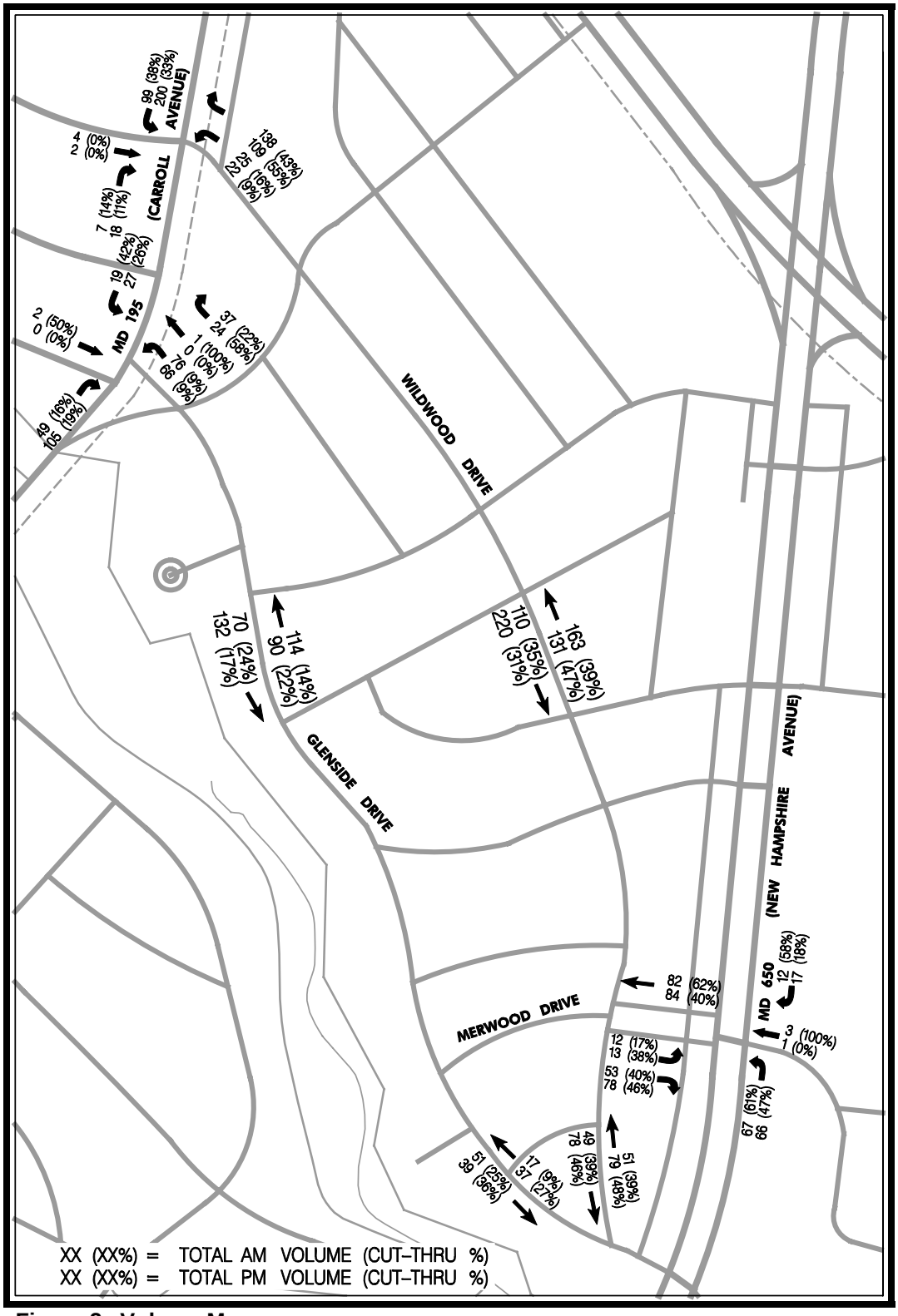

Figure 2. Volume Map

WALLACE, MONTGOMERY & ASSOCIATES, LLP

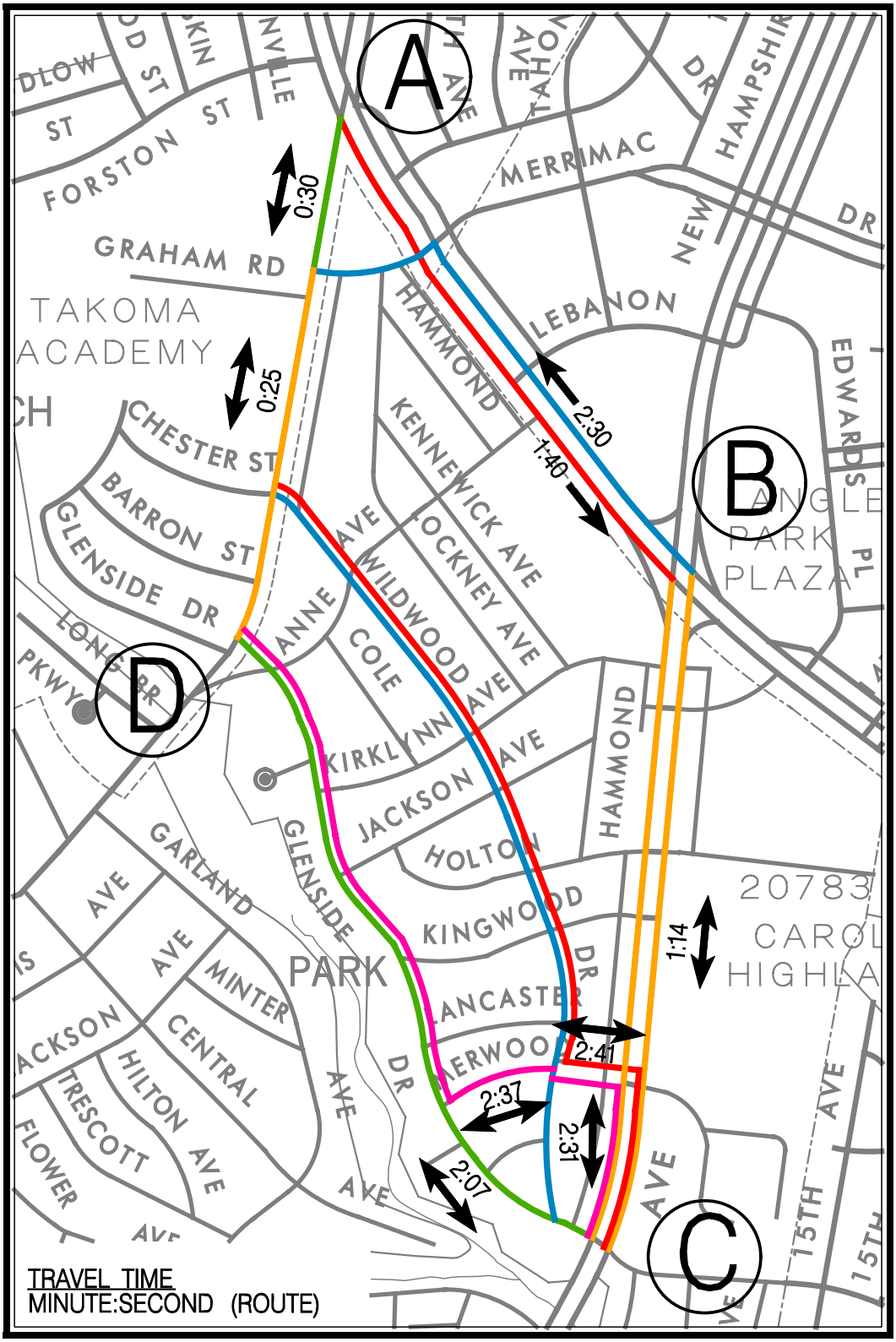

Figure 3. Cut-through Route Map

3. Speed Analyses

Spot speed studies were performed during non-peak periods on Tuesday, May 22, 2007 along the following New Hampshire Gardens neighborhood roadways to determine the vehicular speeds:

- Glenside Drive – Adjacent to Glenside Court (Timed and Speed Gun)
- Glenside Drive – Between Merwood Drive and Havorford Road (Timed)
- Glenside Drive – Just west of Wildwood Drive (Speed Gun)
- Wildwood Drive – Between Anne Street and Kirklynn Avenue (Timed)
- Wildwood Drive – Between Holton Lane and Kingwood Drive (Timed)
- Lockney Avenue – Between Anne Street and Kirklynn Avenue (Timed)
- Kennewick Avenue – Between Anne Street and Kirklynn Avenue (Speed Gun)
- Anne Street – Adjacent to Kennewick Avenue (Timed)
- Kirklynn Avenue – Between Kennewick Avenue and Lockney Avenue (Speed Gun)
- Kirkynn Avenue – Between Cole Avenue and Glenside Drive (Timed)

The speeds were recorded for both directions either by a speed gun or timed via stop watch over a measured distance. **Table 2** summarizes the travel speeds collected within the neighborhood, and **Appendix C** provides detailed worksheets of the spot speed studies.

Table 2. Travel Speed Summary

Roadway	Location	Percentile Speed (mph)					
		Direction 1 (NB/EB)			*Direction 2 (SB/WB)*		
		50%	85%	>25 mph (%)	50%	85%	>25 mph (%)
Glenside Dr	Glenside Ct	19	22	0	19	26	18
	Merwood Dr & Haverford Rd	15	20	11	17	25	14
	West Wildwood Dr	20	22	0	22	27	33
Wildwood Dr	Anne St & Kirklynn Ave	28	34	70	27	31	70
	Holton Ln & Kingwood Dr	20	26	21	20	25	13
Lockney Ave	Anne St & Kirklynn Ave	15	19	0	0	0	0
Kennewick Ave	Anne St & Kirklynn Ave	23	28	31	24	31	37
Anne St	Kennewick Ave	15	18	3	14	18	0
Kirklynn Ave	Kennewick Ave & Lockney Ave	21	26	21	20	26	20
	Cole Ave & Glenside Dr	19	20	20	20	21	25

The 50th percentile speed represents the median speed, and the 85th percentile speed represents the speed that drivers select as the highest safe speed and often determines the speed limit for the roadway. Glenside Drive, Wildwood Drive, Kennewick Avenue and Kirklynn Avenue had locations with 85th percentile speeds above the posted speed limit of 25 mph.

E. SUMMARY & RECOMMENDATIONS

The residents of the Takoma Park neighborhood of New Hampshire Gardens, located in southeastern Montgomery County, Maryland, have expressed concerns of speeding and cut-through traffic within their neighborhood roadways. The origin-destination study confirmed that Wildwood Drive is significantly used as cut-through roadway; however the travel time study confirmed that these routes do not improve travel times for motorists accessing Carroll Avenue and avoiding the MD 193/ MD 650 intersection. The speed study confirmed that travel speeds within the neighborhood roadways are above the posted speed limit in certain locations. The Glenside Drive/ Wildwood Drive traffic circle experiences poor driver behavior with motorist not slowing at the Yield sign along the eastbound Glenside Drive approach.

As mentioned previously, the focus for the New Hampshire Gardens neighborhood is to recommend measures to reduce speeds. Currently the neighborhood uses speed humps, regulatory signs (Stop and Speed Limit signs), and traffic circles to calm traffic. The significant on-street parking indirectly calms traffic by narrowing the roadway widths.

The following recommendations identify proposed measures that may be implemented to improve traffic calming for the New Hampshire Gardens neighborhood.

1. New Speed Hump Locations

A few sections of roadway along major neighborhood routes that experience speeding do not have speed humps. Installing additional speed humps at new locations along Glenside Drive, Wildwood Drive, Kennewick Avenue, and Kirklynn Avenue may reduce speeds through the neighborhood. The locations of the recommended improvements are diagramed in **Figure 3**. These improvements will cost approximately $10,000 ($2,000/speed hump). **Appendix C** provides a standard detail for a speed hump.

Picture 1. Existing speed hump in good condition

2. Regulatory Signs

A few of the locations entering the neighborhood do not provide 25 mph posted speed limit signs. Providing Speed Limit signs along all the roadways entering from MD 650 and Carroll Avenue will improve driver awareness of the travel speeds for all motorists entering the neighborhood. The locations of the recommended improvements are diagramed in **Figure 3**. This improvement will cost approximately $1,800 ($300/sign).

A few of the all-way stop controlled intersections do not provide "All Way" supplement signs (R1-4) under the Stop sign. Installing "All Way" supplement signs under all of the Stop signs at the Wildwood Drive/ Kirklynn Avenue and Wildwood/ Jackson Avenue intersections will improve the driver awareness of the operations of the intersections. This improvement will cost approximately $100.

3. Intersection Revisions

The layout of the Lockney Avenue/ Kennewick Avenue traffic circle creates the perception that the northbound motorists going straight have enough room to avoid traveling around the circle. (See **Picture 2**) We recommend providing a splitter island and associated signing at this approach to further channelize motorists to keep right and travel counter clockwise around the traffic circle. (See **Picture 3**) This improvement will cost approximately $1,000.

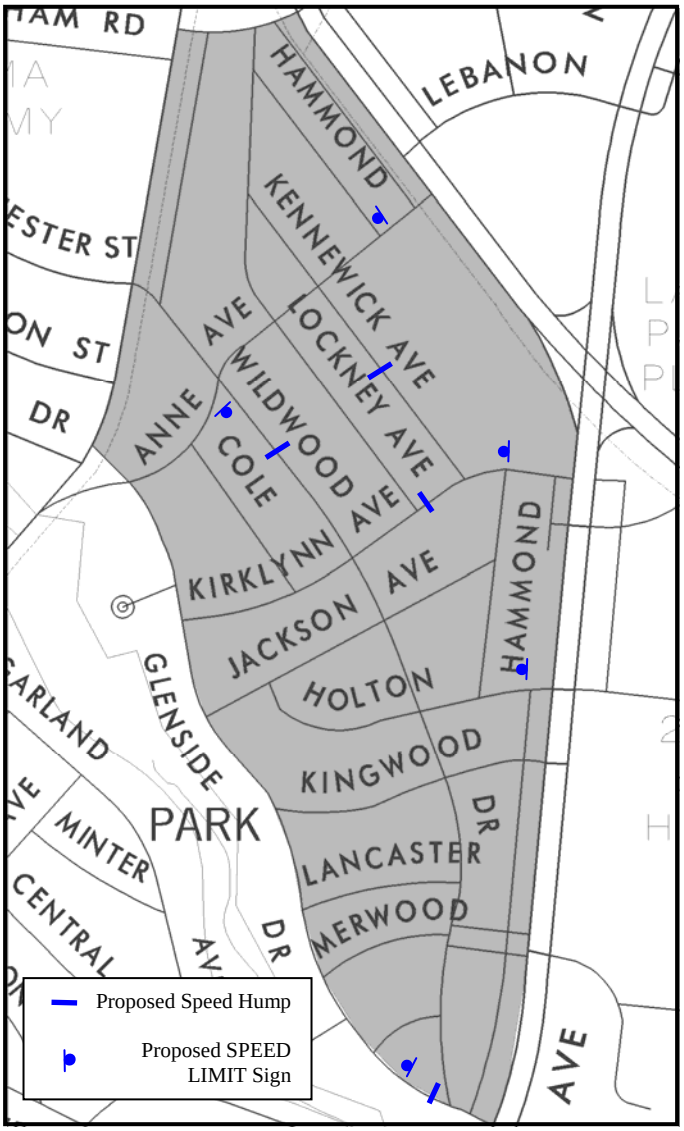

Figure 3. Recommended Improvement Location Map

Picture 2. Northbound Lockney Avenue Approach to Kennewick Avenue

Picture 3. Example of a Splitter Island for a Traffic Circle

The "Y" intersection of Kirklynn Avenue/ Kennewick Avenue is very wide and promotes speeding. Narrowing the intersection into a "T" configuration will remove excess pavement to narrow the intersecting roadways and ultimately reduce speeds entering the intersection. A schematic of the channelized island is diagramed in **Figure 4**. This improvement will cost approximately $15,000.

Figure 4. Proposed Pavement Reduction at Kirklynn/ Kennewick Avenue Intersection

For the Kirklynn Avenue/ Kennewick Avenue intersection, installing a traffic circle would further slow speeds down entering the neighborhood and remove the excess pavement. A schematic of the traffic circle is diagramed in **Figure 5**. This improvement will cost approximately $40,000.

Figure 5. Proposed Roundabout at Kirklynn/ Kennewick Avenue Intersection

4. Chicane Location

Wildwood Drive between Anne Street and Kirklynn Avenue experienced the highest measure travel speeds. If the proposed speed hump along this stretch of roadway proves to be ineffective, replacing the speed hump with a one-lane chicane will effectively reduce speeds. (See **Pictures 4 & 5** for examples) Coordination with potential impacted property owner will be needed, because this type of traffic calming device will eliminate on-street parking. This improvements will cost approximately $5,000. **Appendix D** provides a site sketch for a chicane alignment along Wildwood Drive.

Pictures 4 & 5. Examples of One-Lane Chicanes

Appendix A

Origin-Destination Worksheets

Appendix B

Spot Speed Study Worksheets

Appendix C

Speed Hump Standard Detail

Appendix D

Chicane Site Sketch